

2. The antennae of insects belong to the first postoral segment and are entirely homologous with the remaining ventral extremities. They do not correspond to the antennae of *Peripatus*, but probably to the chelicerae of spiders, and perhaps to the second pair of antennae of Crustacea.

3. Since the possibility that a number of segments in the germinal streak of different arthropods have disappeared is not excluded, a homology of the mouth-parts of the different classes of Arthropoda cannot at present be set up.

4. The abdominal appendages of the insectan germinal streak (including the cerci) are homologous with the thoracic legs. Herein it makes no difference whether these appendages are attached to the middle, at the side, at the front, or hind margin (are meso-, pleuro-, pro-, or opisthostatic, in the terminology of Graber), provided only that their cavity is immediately continuous with that of the somite to which they belong. The fact that the abdominal appendages usually remain unsegmented in nowise tends to show that they are not of the nature of limbs, since, for instance, the mandibles also are always unsegmented.*

5. Many of the abdominal appendages of larvae and perfect insects are homologous with the thoracic legs, even when they are secondary in ontogeny.

6. The primitive function of the first pair of the abdominal appendages was ambulatory, as also that of the remaining appendages. The ancestors of the insects were therefore undoubtedly homopod, not heteropod.

7. The many-legged insect larvae are to be derived from the six-legged just as little as are, conversely, the hexapod larvae from the polypod; both forms developed independently of one another.

8. The embryonic envelopes of the insects probably correspond to the remains of a trochosphere.

* Whether the segmented branchial filaments of *Sisyra* and *Sialis* belong to this category is doubtful, but can only be decided by embryological investigations.

WESTWOOD AND STAINTON.

The death on Jan. 2 of Prof. J. O. Westwood of Oxford at the advanced age of 87 removes the most distinguished entomologist of our time. For sixty-five years his contributions to our science have been uninterrupted and have enriched and advanced every branch of systematic entomology. No writer has made known so many singular forms, for which he seems to have had a remarkable predeliction. He had a Latreillean eye for structure and he depicted insects with rare skill; of his published drawings there must be many thousands, and they are of the utmost service to the systematist; yet his portfolios are crowded with unpublished figures. His Introduction to the classification of insects, though half a century old, is a storehouse of fact and historical statement, admirably presented and still our best general guide; but to do for the entomology of today what he did for that of 1840 would require treble the space he gave to it. No entomologist the world over has been held in such reverent esteem by Americans as Westwood.

News comes from England of the death of Mr. H. T. Stainton at the age of 70. His studies of the Tineina are well known to all American entomologists and he will be remembered especially by them for his careful collocation of the scattered papers of our own Brackenridge Clemens on the subject. Stainton did much to interest the young in entomology and edited journals especially intended for the tyro and collector. His work on the Tineina was curiously published in four different languages in parallel columns. Most of us are glad to publish in one.

ENTOMOLOGICAL NOTES.—The first volume of Moore's gigantic undertaking upon the Lepidoptera India is now completed with the publication of Part 12. This fine quarto volume, dedicated to the Empress of India and begun in 1890, contains 340 pages and 94 colored plates and yet deals with only two subfamilies of Nymphalidae—the Euploeinae and Satyrinae.

Early in 1891 Osten Sacken proposed a new

grouping of the Diptera orthorrhapha, which he has now published in detail in English in the Berliner entom. zeitschr. for 1892 (pp. 417-466). His *Nemocera vera* contain the families Cecidomyiidae, Mycetophilidae, Culicidae, Chironomidae, Psychodidae, Dixidae (?), and Tipulidae; his *Nemocera anomala*, the Bibionidae, Simulidae, Blepherozeridae, Rhyphidae and Orphnephilidae; and his *Eremochaeta*, the Stratiomyidae, Tabanidae, Acanthomeridae and Leptidae (+Xylophagidae). His complete discussion will be found very interesting.

With the publication of the seventh part Distant has completed his Monograph of Oriental Cicadidae, a large quarto of over 150 pages and 15 plates crowded with admirable figures. The work includes 268 species arranged in 34 genera and divided into the two subfamilies of Cicadinae and Tibiceninae according as the tympana are mostly covered or uncovered. Owners of the work, which is published by the Indian Museum of Calcutta, will be glad to place it by the author's Rhopalocera Malayan.

The recent publication of a new part of the Proceedings of the Entomological society of Washington completing vol. 2 and filled with biological papers of broad interest, emphasizes once more the concentration of entomological industry at our national capital and the excellent influence exerted by the division of entomology in the U. S. department of agriculture.

PROCEEDINGS OF SOCIETIES.

CAMBRIDGE ENTOMOLOGICAL CLUB.

9 December, 1892. The 174th meeting was held at 156 Brattle St. Mr. S. H. Scudder was chosen chairman.

Mr. Howard Evarts Weed of Agricultural College, Miss., was elected an active member.

Mr. S. H. Scudder exhibited a sketch of the body of a carboniferous walking stick, *Protophasma*, from Europe to show that the three divisions of the thorax must have been of nearly equal length and not as in living

Phasmidae very unequal, the prothorax in living forms (with the exception of *Protophasma*, *Phyllium* and similar highly specialized forms) being much shorter than the other two divisions. He stated that this was the condition now of the embryo *Diapheromera* just before leaving the egg, the elongation of the mesothorax and metathorax taking place during the emergence of the insect from the egg. This adds another to the numerous instances in which the early types of animals resembled the embryonic rather than the mature condition of their modern representatives.

He also stated that in the examination of a nearly ripe embryo of *Dissosteira carolina*, he found one of the antennae completely developed, which the other showed only the enlarged base, the stalk being entirely absent. In the same embryo there was an entirely different arrangement of the middle legs of the two sides; on one side, which seemed the normal, the femur overlay the hind femur and the tibia and tarsi were folded sharply back upon the femur; upon the other, the femur lay beside the hind femur, and the tibia was bent at only about a right angle to the femur; but apically was with the tarsi twice bent to keep it from extending beyond the opposite side of the body.

He remarked further on a species of *Grylodes* found in a burrow beneath a small sand hillock in Florida, by Mr. C. J. Maynard.

Mr. A. P. Morse showed some specimens taken by him at Wellesley, Mass., Nov. 17, 1892, of the following species: *Chortophaga viridifasciata*, *Stenobothrus curtipennis*, *Melanoplus collinus*, *Encoptolophus sordidus* and *Eurymus philodice*. All the specimens were mature. In the case of the first named an unusual occurrence at that season of the year.

He also showed a specimen of *Xabea bipunctata* taken by him at New Haven, Conn., Aug. 30. Mr. Scudder said he thought it had not been previously taken in New England.